

## CLAIMS

What is claimed is:

5                    1. A system for monitoring the performance of a hydrocarbon reformer,  
comprising:

                    a) a quantitative hydrocarbon sensor; and

                    b) means for providing a sample of the reformat output of said reformer to said  
sensor.

10                   2. A system in accordance with Claim 1 wherein said sample providing is  
continuous.

15                   3. A system in accordance with Claim 1 wherein said hydrocarbon is  
methane.

                    4. A system in accordance with Claim 1 wherein said hydrocarbon sensor  
is selected from the group consisting of catalytic, optical, and solid oxide electrode.

20                   5. A system in accordance with Claim 1 further comprising means for  
providing air to said sensor.

                    6. A system in accordance with Claim 5 further comprising means for  
combining said air and said reformat sample in a fixed and predetermined ratio.

25                   7. A system in accordance with Claim 6 wherein said means for combining  
includes at least one positive displacement pump.

8. A system in accordance with Claim 6 wherein said means for combining includes a double-headed positive displacement pump.

5 9. A system in accordance with Claim 1 wherein said reformer is a source of gaseous fuel for a fuel cell.

10. A system in accordance with Claim 1 further comprising means for displaying and alarming the methane content of said reformat sample.

10 11. A system in accordance with Claim 1 further comprising means for shutting down said fuel cell.

12. A fuel cell system, comprising:

a) a fuel cell stack;

15 b) a hydrocarbon reformer for supplying gaseous fuel in the form of reformat to said stack;

c) a quantitative hydrocarbon sensor for measuring hydrocarbon content of said reformat; and

b) means for providing a sample of said reformat to said sensor.

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